



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/643,550	08/22/2000	Shanna D. Knights	12547US02	9685

7590 10/23/2003

Robert W Fieseler  
McAndrews Held & Malloy Ltd  
500 West Madison Street  
34th Floor  
Chicago, IL 60661

EXAMINER

WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
----------	--------------

1746

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/643,550

Applicant(s)

KNIGHTS ET AL

Examiner

Wills M Monique

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 and 8-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12, 15-19 and 23 is/are allowed.
- 6) ☒ Claim(s) 1-6, 20-22, 24, 25, 28, 31, 33-38 and 40-42 is/are rejected.
- 7) ☒ Claim(s) 8-11, 13, 14, 26, 27, 29, 30, 32 and 39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

This Office Action is responsive to the Amendment filed August 7, 2003. Claims 12,15-19 & 23 are allowable. Claims 8-11,13,14, 30 & 26,27,29,32 & 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. The objection of claims 8, 10,13 & 20 as for being dependent on claim 7 is overcome. The rejection of claims 1, 20-22, 34 & 41-42 under 35 U.S.C. 102(e) as being anticipated by Krumpelt et al. U.S. Patent 6,110,861, is maintained. The rejection of claims 2-6 under 35 U.S.C. 103(a) as being unpatentable over Krumpelt et al. U.S. Patent 6,110,861 as applied to claim 1 above, and further in view of Narayanan et al. U.S. Patent 5,945,231 is maintained. The rejection of claims 24,25, 28, 31, 33, 35-38 & 40 under 35 U.S.C. 103(a) as being unpatentable over Krumpelt et al. ("Krumpelt") U.S. Patent 6,110,861 as applied to claim 1 above, and further in view of Wilkinson et al. ("Wilkinson") U.S. Patent 5,672,439 is also maintained. A brief reiteration is recited below.

***Allowable Subject Matter***

Claims 12,15-19 & 23 are allowable over the prior art of record, because the prior art is silent to an anode having improved tolerance to voltage reversal comprising a first and second catalyst, wherein the second catalyst includes RuO<sub>2</sub>/IrO<sub>2</sub> (claim 12) or RuO<sub>2</sub>/TiO<sub>2</sub>(claims 15-19 & 23).

Claims 8-11,13,14, 30 & 26,27,29,32 & 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 8-11, 13,14 would be allowable over the prior art of record, because the prior art is silent to an anode having improved tolerance to voltage reversal comprising a first and second catalyst, wherein the second catalyst is a metal oxide including RuO<sub>x</sub>, IrO<sub>x</sub> and mixtures thereof.

The prior art is also silent to a titanium oxide composition supported on a second electrically conductive carbon support (claim 30).

Claims 26,27,29,32 & 39 would be allowable over the prior art of record, because the prior art is silent to a catalyst containing two separate compositions wherein the second catalyst is a metal oxide and said first and second catalyst are on separate electrically conductive supports.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 20-22, 34 & 41-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Krumpelt et al. U.S. Patent 6,110,861.

Krumpelt teaches a partial oxidation catalyst that may be employed in a fuel cell for a vehicle (col. 1, lines 20-25). The catalyst comprises two separate compositions including doped ceria ( $\text{Ce}_{0.8}\text{Gd}_{0.2}\text{O}_{1.9}$ ) and Pt metal. Each composition was mixed in a desired ratio of 1% Pt metal and 99% ceramic along with some isopropyl alcohol and a dispersing agent and milled vigorously in a high density polyethylene media (col. 2, lines 55-65). Therefore, because the two compositions were physically mixed instead of chemically reacted, they maintained their individual compositions in the mixture. See column 2, lines 55-68. Consequently, the instant claims are anticipated by Krumpelt.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krumpelt et al. U.S. Patent 6,110,861 as applied to claim 1 above, and further in view of Narayanan et al. U.S. Patent 5,945,231.

Krumpelt teaches a two part catalyst for a fuel cell as described hereinabove.

The reference does not expressly disclose the type of fuel cell employed.

Narayanan teaches that it is conventional to employ platinum catalyst in both acid and solid polymer electrolyte fuel cells to improve the catalyst efficiency and reactivity in the fuel cell (col. 1, lines 25-50 and col. 2, lines 40-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the platinum catalyst in an acid or solid polymer electrolyte fuel cells in order to improve the catalyst efficiency and reactivity in said cells.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24,25, 28, 31, 33, 35-38 & 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krumpelt et al. ("Krumpelt") U.S. Patent 6,110,861 as applied to claim 1 above, and further in view of Wilkinson et al. ("Wilkinson") U.S. Patent 5,672,439.

Krumpelt teaches a two-part catalyst for a fuel cell as described hereinabove.

The reference is silent to the first and second catalyst being supported on the same carbon support.

However, Wilkinson teaches a fuel cell comprising a multi-layer electrode 90 comprising five stacked layers of porous electrically conductive sheet material 92a, 92b, 92c, 93a, 93b. The electrode 90 has oppositely facing major planar surfaces 90a, 90b. In a direct methanol solid polymer fuel cell electrode, surface 90b is disposed adjacent the membrane electrolyte. Catalyst particles 96 are disposed in layers 92a, 92b and 92c. Sufficient catalyst is provided so that substantially all of the methanol, which is introduced in a fluid to the electrode 90 at surface 90a is oxidized upon contacting surface 90b. The electrode 90 also includes porous layers 92a, 92b, 92c that are carbon cloth filled with a matrix of carbon particles and a polymeric binder, and

Art Unit: 1746

catalyst particles 96 are distributed throughout the thickness of the layers 92a, 92b, 92c. Porous layers 93a and 93b are carbon cloth that is not filled with a matrix and catalyst particles, and are therefore more porous. This electrode is structured to facilitate escape of gaseous carbon dioxide product to reduce poisoning of the catalysts (col. 7, lines 25-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the electrode structure of Wilkinson in the fuel cell of Krumpelt to facilitate escape of gaseous carbon dioxide product in order to reduce poisoning of the catalysts.

### ***Response to Arguments***

The Applicant asserts that the subject invention is patentably distinct from Krumpelt, because the reference does not disclose or suggests the use of such catalyst in a fuel cell or as an electrode in a fuel cell. This argument is not persuasive. The reference teaches that the catalyst is used for oxidizing a fuel directed to a fuel cell (col. 1, lines 39-45). Further, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as

Art Unit: 1746

compared to the prior art. In re Casey , 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963). Therefore, because the catalyst of Krumpelt oxidizes fuel sent to a fuel cell, the catalyst is also capable of functioning as an anode, thus the claims are met.

### ***Conclusions***

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (703) 305-0073. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

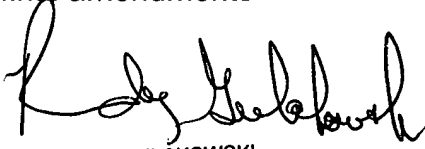
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 703-308-4333.

The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw

10/15/03

  
RANDY GULAKOWSKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700